

**ELECTRICAL CONNECTOR ADAPTED FOR USE WITH FIRST AND
SECOND ELECTRONIC CARDS**

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The invention relates to an electrical connector, more particularly to an electrical connector adapted for use with first and second electronic cards.

2. Description of the Related Art

10 Various types of electronic cards, such as a smart media (SM) card, a memory stick (MS) card, a secure digital (SD) card, a mini-SD card, a multimedia card (MMC), and an xD card, are currently available for storing electrical data of portable electronic devices.

15 Currently, a conventional electrical connector includes a dielectric housing confining a card receiving space, and a plurality of sets of conductive terminals mounted in the dielectric housing for contacting conductive contacts on different electronic cards. However, the conventional electrical connector only
20 permits insertion of a single electronic card into the card receiving space at a time.

SUMMARY OF THE INVENTION

25 Therefore, the object of the present invention is to provide an electrical connector adapted for simultaneous use with first and second electronic cards.

 According to the present invention, an electrical connector comprises:

a dielectric housing having a bottom wall that has opposite lateral sides, opposite lateral walls, each of which extends uprightly from a respective one of the lateral sides of the bottom wall and has an upper wall portion and a lower wall portion, and a partition wall parallel to and disposed above the bottom wall, the partition wall extending between the lateral walls and having opposite lateral ends, each of which is connected to a junction of the upper and lower wall portions of a respective one of the lateral walls, the partition wall cooperating with the lower wall portions of the lateral walls and the bottom wall so as to confine a first card receiving space, the dielectric housing further having a front open side for access into the first card receiving space, and a rear side;

a cover plate mounted on the lateral walls and disposed above the partition wall of the dielectric housing such that the cover plate cooperates with the upper wall portions of the lateral walls and the partition wall so as to confine a second card receiving space;

a set of first conductive terminals disposed on the bottom wall of the dielectric housing, each of the first conductive terminals having a first coupling end portion extending outwardly of one of the front open side and the rear side of the dielectric housing, and a first contacting end portion opposite to the first coupling

end portion and projecting into the first card receiving space; and

a set of second conductive terminals disposed on the partition wall of the dielectric housing, each of the second conductive terminals having a second coupling end portion extending outwardly of the rear side of the dielectric housing, and a second contacting end portion opposite to the second coupling end portion and projecting into the second card receiving space.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, of which:

Figure 1 is a perspective view showing the first preferred embodiment of an electrical connector according to the present invention when used with first and second electronic cards;

Figure 2 is a front perspective view of the first preferred embodiment;

Figure 3 is a rear perspective view of the first preferred embodiment;

Figure 4 is a perspective view showing the first preferred embodiment, with a cover plate removed therefrom;

Figure 5 is a view taken along line V-V of Figure 4;

Figure 6 is a perspective view showing the first preferred embodiment when used with only the first electronic card;

5 Figure 7 is a perspective view showing the first preferred embodiment when used with only the second electronic card;

Figure 8 is a perspective view showing a cover plate of the first preferred embodiment;

10 Figure 9 is a front perspective view showing the second preferred embodiment of an electrical connector according to this invention; and

Figure 10 is a rear perspective view of the second preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Before the present invention is described in greater detail, it should be noted that like elements are denoted by the same reference numerals throughout the disclosure.

20 Referring to Figure 1, the first preferred embodiment of an electrical connector 1 according to the present invention is shown to be adapted for use with a first electronic card 91, such as an SD card, and a second electronic card 92, such as a mini-SD card. Referring to Figures 2 to 5, the first preferred embodiment of
25 the electronic connector 1 is shown to include a dielectric housing 2, a cover plate 3, a set of first conductive terminals 5, and a set of second conductive

terminals 6.

As shown in Figures 2, 4 and 5, the dielectric housing 2 has a bottom wall 21 that has opposite lateral sides 212, opposite lateral walls 22, each of which extends
5 uprightly from a respective one of the lateral sides 212 of the bottom wall 21 and has an upper wall portion 222 and a lower wall portion 221, and a partition wall 24 parallel to and disposed above the bottom wall 21. The partition wall 24 extends between the lateral walls
10 22, and has opposite ends 241, each of which is connected to a junction of the upper and lower wall portions 222, 221 of a respective one of the lateral walls 22. The partition wall 24 cooperates with the lower wall portions 221 of the lateral walls 22 and the bottom wall 21 so
15 as to confine a first card receiving space 910 (see Figure 2). The dielectric housing 2 further has a rear side 26, and a front open side 25 for access into the first card receiving space 910. In this embodiment, the bottom wall 21 is formed with a plurality of terminal
20 mounting grooves 211, and has a front end formed with a notch 210 (see Figure 5). The partition wall 24 is formed with a plurality of terminal mounting grooves 241, and has a front end formed with a notch 240 (see Figure 4). The dielectric housing 2 further has a rear
25 wall 23 disposed at the rear side 26 and formed with a plurality of mounting holes 231.

As shown in Figures 2 and 8, the cover plate 3, which

is made of metal, is mounted on the lateral walls 22, and is disposed above the partition wall 24 of the dielectric housing 2 such that the cover plate 3 cooperates with the upper wall portions 222 of the lateral walls 22 and the partition wall 24 so as to confine a second card receiving space 920 (see Figure 2). The first and second card receiving spaces 910, 920 have different widths. More specifically, the width of the first card receiving space 910 is larger than that of the second card receiving space 920 such that the first card receiving space 910 is adapted to accommodate the wider first electronic card 91 therein and that the second card receiving space 920 is adapted to accommodate the narrower second electronic card 92 therein. In this embodiment, the cover plate 3 has a front end formed with a notch 30. The cover plate 3 is formed with a pair of downwardly extending lateral flanges 4 that flank the lateral walls 22 of the dielectric housing 2, and a plurality of resilient clamping pieces 31 that project into the second card receiving space 920 (see Figure 2). Each of the lateral flanges 4 is formed with a set of first engaging members 70 in the form of holes. Each of the lateral walls 22 of the dielectric housing 2 is formed with a set of second engaging members 7 in the form of projections corresponding to the first engaging members 70 on the lateral flanges 4. The second engaging members 7 on the lateral walls 22 of the dielectric

housing 2 engage respectively and releasably the first engaging members 70 on the lateral flanges 4, as shown in Figure 2. Each of the lateral flanges 4 is formed with a grounding contact portion 41.

5 As shown in Figure 5, the first conductive terminals 5 are disposed on the bottom wall 21 of the dielectric housing 2. Each of the first conductive terminals 5 is mounted in a corresponding one of the terminal mounting grooves 211 in the bottom wall 21, and has a
10 first coupling end portion 52 extending outwardly of the rear side 26 of the dielectric housing 2 and through a corresponding one of the mounting holes 231 in the rear wall 23, and a first contacting end portion 51 opposite to the first coupling end portion 52 and
15 projecting into the first card receiving space 910. In this embodiment, the first contacting end portions 51 of the first conductive terminals 5 are adapted to contact electrically and respectively a set of conductive contacts (not shown) on the first electronic
20 card 91 when the first dielectric card 91 is inserted into the first card receiving space 910 through the front open side 25 of the dielectric housing 2, as shown in Figure 6.

25 As shown in Figure 4, the second conductive terminals 6 are disposed on the partition wall 24 of the dielectric housing 2. Each of the second conductive terminals 6 is mounted in a corresponding one of the terminal

mounting grooves 241 in the partition wall 24, and has a second coupling end portion 62 extending outwardly of the rear side 26 of the dielectric housing 2 and through a corresponding one of the mounting holes 231 in the rear wall 23, and a second contacting end portion 61
5 opposite to the second coupling end portion 62 and projecting into the second card receiving space 920. In this embodiment, the second contacting end portions 61 of the second conductive terminals 6 are adapted to
10 contact electrically and respectively a set of conductive contacts (not shown) on the second electronic card 92 when the second electric card 92 is inserted into the second card receiving space 920 through the front open side 25 of the dielectric housing 2, as shown
15 in Figure 7.

Figures 9 and 10 illustrate the second preferred embodiment of an electrical connector 1' according to this invention, which is a modification of the first preferred embodiment. In this embodiment, the width
20 of the first card receiving space 910' is smaller than that of the second card receiving space 920'. The notches 30', 240', 210' of the cover plate 3', the partition wall 24' and the bottom wall 21' are smaller as compared to those of the cover plate 3, the partition
25 wall 24 and the bottom wall 21 in the first preferred embodiment. Furthermore, the first coupling end portions 52' of the first conductive terminals 5' extend

outwardly of the front open side 25 of the dielectric housing 2' and through the notch 210' in the bottom wall 21'. The mounting holes 231' in the rear wall 23' respectively permit extension of the second coupling
5 end portions 62 of the second conductive terminals 6 outwardly of the rear side 26 of the dielectric housing 2'.

While the present invention has been described in connection with what is considered the most practical
10 and preferred embodiments, it is understood that this invention is not limited to the disclosed embodiments but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications
15 and equivalent arrangements.